IN THE CLAIMS:

A detailed listing of all claims is as follows. Please amend the claims as follows:

Claims 1-3 (Canceled).

Claim 4 (Currently Amended): The laser-based measuring apparatus according to claim [[3]] 9, wherein said measuring apparatus comprises a plurality of said opposing incident optical systems arranged around the cylinder.

Claims 5-7 (Canceled).

Claim 8 (Currently Amended): The laser-based measuring method according to claim [[7]] 10, wherein a plurality of opposing incident optical systems are ~~provided~~ arranged around the cylinder.

Claim 9 (Currently Amended): A laser-based measuring apparatus for measuring an ~~amount of travel of an object~~ axial run-out in a cylinder of rotation, comprising:

a laser light source;

a portion for generating at least two measuring light beams by dividing a light beam provided from the laser light source;

a cylinder having an axis of rotation and cylindrical side surface portions opposing to each other on a diameter;

~~two reflection planes included in the object moving on~~ a measuring axis[[,]] ~~said reflection planes arranged back-to-back to each other on said measuring axis~~ positioned on the cylinder's diameter to pass through the axis of rotation of the cylinder;

an opposing incident optical system for directing said two measuring light beams through separate optical paths into said ~~two reflection planes~~ cylindrical side surface portions, respectively, such that said two measuring light beams oppose to each other on said measuring axis, wherein said opposing incident optical system receives light beams reflected by said ~~two reflection planes~~ cylindrical side surface portions to recombine the reflected light beams so as to interfere with each other to generate interfered light;

a photodetector for receiving the interfered light to generate a beat signal as the difference of optical frequencies by heterodyne detection; and

a measuring circuit connected to the photodetector for calculating the ~~amount of travel of an object~~ axial run-out in the cylinder of rotation which changes an optical path length of a portion of an optical path based on the beat signal.

Claim 10 (Currently Amended): A laser-based measuring method for measuring ~~an amount of travel of an object~~ axial run-out in a cylinder of rotation, comprising the steps of:

setting ~~two reflection planes included in the object moving on a measuring axis~~[[,]] a cylinder having an axis of rotation and cylindrical side surface portions opposing to each other on a diameter such that said ~~two reflection planes~~ cylindrical side surface portions are arranged ~~back-to-back to each other~~ on a ~~said~~ measuring axis extending in the cylinder's diameter;

generating at least two measuring light beams by dividing a light beam provided from a laser light source;

directing said measuring light beams through separate optical paths into said ~~two reflection planes~~ cylindrical side surface portions, respectively, such that said measuring light beams oppose to each other on said measuring axis;

receiving light beams reflected by said ~~two reflection planes~~ cylindrical side surface portions to recombine the reflected light beams so as to interfere with each other to generate interfered light;

photo-detecting the interfered light to generate a beat signal as the difference of optical frequencies by heterodyne detection; and

calculating the ~~amount of travel of an object~~ axial run-out in the cylinder of rotation which changes an optical path length of a portion of an optical path based on the beat signal.

Claim 11 (New): The laser-based measuring apparatus according to claim 9, further comprising converging lenses which are co-axially positioned on both sides of the cylinder on the measuring axis for converging the measuring light beams.

Claim 12 (New): The laser-based measuring method according to claim 10, further comprising a step of providing converging lenses which are co-axially positioned on both sides of the cylinder on the measuring axis for converging the measuring light beams.